

## I. AMENDMENTS TO THE CLAIMS

This listing of the claims will replace all prior versions and listings.

### LISTING OF CLAIMS:

Claims 1-26 (canceled).

Claim 27 (currently amended) A method of ~~manipulating the metabolism of a cell~~ increasing Coenzyme A (CoA) flux, comprising:

- a) generating a bacterial cell comprising:
  - i) a first recombinant gene encoding pantothenate kinase (PanK);
  - ii) a second recombinant gene encoding pyruvate dehydrogenase (PDH), and
  - iii) a third recombinant gene encoding alcohol acetyl transferase (ATF);
- b) culturing said cell in a cell medium comprising ~~pantothenic~~ pantothenic acid under conditions wherein said recombinant genes are expressed, thereby increasing CoA ~~production~~ flux relative to said bacterial cell without said recombinant genes.

Claim 28 (currently amended) The method of claim 27, wherein the bacterial cell further comprises reduced activity of *ackA*, or *pta*, or both *ackA-pta*.

Claim 29 (previously presented) The method of claim 27, where the *panK* gene is under the control of the *lac* promoter and the *atf*[[2]] gene is under the control of the *ptb* promoter.

Claim 30 (previously presented) The method of claim 27, wherein said cell is cultured in a bioreactor, fermentor, chemostat, or shaker-flask culture.

Claim 31 (currently amended) The method of claim 27, wherein increasing said CoA ~~production~~ increases production of isoamyl acetate flux increases conversion of an alcohol to an ester.

Claim 32 (currently amended) A method of increasing Coenzyme A (CoA) ~~dependent~~ metabolism flux comprising:

- a) generating a bacterial cell comprising:
- i) a combination of recombinant genes encoding alcohol pantothenate kinase (PanK) and pyruvate dehydrogenase (PDH) and alcohol acetyl transferase (ATF);
  - ii) reduced activity of *ackA*, or *pta*, or both *ackA-pta*;

culturing said cell in a medium comprising ~~pantothenic~~ pantothenic acid and isoamyl alcohol under conditions wherein said combination of recombinant genes is expressed, thereby increasing CoA ~~production~~ flux, and thereby increasing production of isoamyl ~~alcohol~~ acetate.

Claim 33 (previously presented) The method of claim 31, where the *panK* gene is under the control of the *lac* promoter and the *atf*[[2]] gene is under the control of the *ptb* promoter.